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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,839	10/19/2001	Yukihiro Okada	10059-389US (P25427-01)	2411

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PHILADELPHIA, PA 19103-7013

EXAMINER

CHANNEY, CAROL DIANE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,839

Applicant(s)

OKADA ET AL.

Examiner

Carol Chaney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 19 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted step is: moistening the alloy powder prior to an alkali treatment with an aqueous solution. Page 44 of applicants' specification states that "...it is extremely important to moisten the alloy powder prior to an alkali treatment with an aqueous NaOH solution, in order to produce a sufficient amount of a magnetic substance on the surface of an alloy powder thereby to shorten the immersion times." It is the position of the examiner that "extremely important" describes a critical step of applicants' invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al., US Patent 5,605,585.

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Yamamoto et al. disclose a method for treating hydrogen storage alloy powders by soaking the powder in an aqueous alkaline solution and then washing the powder with water six times. See Yamamoto, column 10, lines 62-65 and column 11, lines 4-17.) The hydrogen storage alloy used has the composition $\text{MmNi}_{3.7}\text{Mn}_{0.4}\text{Al}_{0.3}\text{Co}_{0.6}$ where Mm is misch metal. (Column 10, lines 62-63.) Although the exact composition of the misch metal is not disclosed, using a molecular weight of 140 g/mol, roughly the molecular weight of lanthanum or cerium for the misch metal, nickel is about 51 weight percent of the hydrogen storage alloy disclosed by Yamamoto et al.

With regards to claim 3, the $\text{MmNi}_{3.7}\text{Mn}_{0.4}\text{Al}_{0.3}\text{Co}_{0.6}$ material disclosed by Yamamoto et al. is a substituted AB_5 , or CaCu_5 , material.

With regards to claim 5, the average particle size of the starting material is about 22 microns in an exemplary embodiment. (See column 9, lines 47-52.)

With regards to claim 9, NaOH solutions may be used as the alkaline solution, the temperature of the solution should be between 60°C and 90°C, the treatment time between 20 minutes and 4 hours, and the density of the treating solution between 1.25 and 1.35 g/cm³. This corresponds to solutions with about 24 to 32 weight percent sodium hydroxide, a range which overlaps the range claimed by the applicants. [Note CRC Handbook of Chemistry and Physics (3rd Electronic Edition, 2000) Table: Concentrative Properties of Aqueous Solutions.]

With regards to claim 10, washing alkali-treated particles 6 times with water will inherently reduce the pH of the run-off water to a value less than 9 by the sixth rinsing.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al., US Patent 5,932,034.

Ishii disclose methods for preparing hydrogen storage alloys for alkaline batteries. A first treatment, or "pretreatment" with either acid or alkali is described. Washing the powder with water after the pretreatment is taught. (Column 4, lines 15-18.) Sodium hydroxide is specifically mentioned as an alkali, and alkali concentrations between 1 and 10N are suggested. (Column 4, lines 45-54.) A 10 N solution of NaOH has a mass density of about 30. [Note CRC Handbook of Chemistry and Physics (3rd Electronic Edition, 2000) Table: Concentrative Properties of Aqueous Solutions.] In a specific embodiment an alloy of $\text{MmAl}_{0.3}\text{Co}_{0.75}\text{Mn}_{0.23}\text{Ni}_{3.75}$ is prepared. (Column 5, lines 58-65.) Nickel will be about 52 weight percent of such an alloy. Pretreating temperatures of up to 150 °C are disclosed by Ishii. (See column 4, lines 55-57.)

The disclosure of Ishii differs from applicants' invention in that Ishii does not specifically disclose washing alkali treated materials with water after treatment. However, Ishii suggest acid or alkali pretreatments are essentially equivalent, (column 3, lines 59-61) and teaches washing the alloy powder with water after acid treatment.

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(column 4, lines 14-17.) Therefore, washing alkali-treated powders with water would have been obvious to one of ordinary skill in the art because Ishii teaches washing acid-treated alloy powders with water, and acid and alkali treatments are considered analogous processing steps.

With regards to claim 2, Ishii discloses treating the hydrogen absorbing alloy with condensed polyphosphoric acid or phytic acid after the alkali (or acid) pretreatment.

(column 6, lines 1-4) The condensed polyphosphoric acid is an oxidizing agent.

With regards to claim 3, the Mm $\text{Al}_{0.3}\text{Co}_{0.75}\text{Mn}_{0.23}\text{Ni}_{3.75}$ material disclosed by Ishii is a substituted AB_5 , or CaCu_5 , material.

With regards to claim 9, Ishii discloses treating times from 0.1 to 10 hours.

(Column 4, lines 65-67.)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Imoto et al., US Patent 6,238,822 disclose acid and alkali treatment of hydrogen storage alloys.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Carol Chaney
Primary Examiner
Art Unit 1745

cc